Materials Science Research Rack (MSRR)

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Marshall Space Flight Center

Objective:

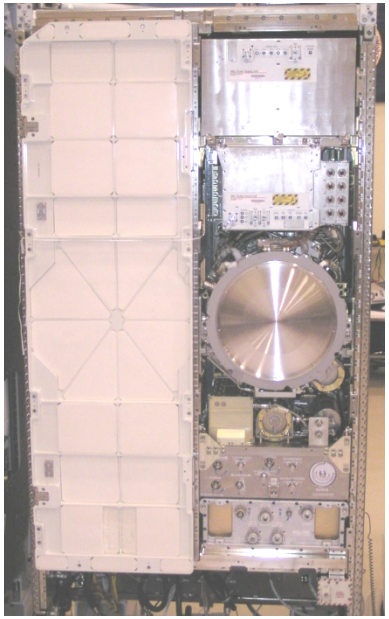
- To provide a facility onboard the ISS to conduct materials science research/technology experiments by:
  - Providing a modular facility to accommodate up to two Experiment Modules (EM)
  - Providing for the facility integration of the ESA MSL EM
  - Successfully supporting the planned investigations through the mission
  - Providing resources for experiment modules: power, data, vacuum (resource and exhaust), cooling, microgravity isolation, video.

Relevance/Impact:

- The MSRR can be utilized for multi-Program tasks
- The MSRR will accommodate the operation of the European Space Agency Materials Science Laboratory (MSL)

Development Approach:

- The MSRR Experiment Carrier (EC) consists of the Rack Support Subsystems (RSS), an Active Rack Isolation System (ARIS) and the International Standard Payload Rack (ISPR) with its Standard Payload Outfitting Equipment (SPOE).
- The MSRR is a multi-purpose International Space Station (ISS) facility capable of accommodating a wide variety of research experiments to conduct material science and technology investigations in micro-gravity
- The MSRR Facility is being designed and developed by the Marshall Space Flight Center, this effort is managed out of the Science and Mission Systems Office (VP)



Experiment Accommodations

Experiment Volume (Alpha side) (7.3 ft^3)	31.75” length x 15.7” depth x 25.37” width
Launch Mass Available (Alpha side)	Max – 107 kg (cg constraints must be analyzed)
Power Available To Experiments (1000 watts total)	5 kW maximum based on two payload operations 2 - 10 amp @ 120 Vdc 8 – 10 amp @ 28 Vdc
Cooling Available	MTL Coolant available Maximum pressure drop = 5.5 psi
Video	NTSC signal per EIA/TIA RS-250-C
Vacuum	VES and VRS access
Data Handling	MRDL Ethernet link to LAN-2 MIL-STD-1553B Remote Terminal interface to Master Controller (Bus Controller)

Revision Date: 05/06/08

Project Life Cycle Schedule

Milestones	LOA	IPL PDR	IPL CDR	JIP	Eng Unit Del	MSFC CoFR	Flight Unit Del	Launch	Transfer of Ownership	Ops	Return
Actual Dates	09/1999	02/2000	04/2002	07/2003	04/2006	TBD	01/20/08	17A, STS-128 06/2009 w/LGF	N/A	TBD	TBD